

STATE OF SOUTH CAROLINA

Application of

Duke Energy Carolinas, LLC
for Approval of Energy Efficiency Plan Including
an Energy Efficiency Rider and Portfolio of Energy
Efficiency Programs.

BEFORE THE
PUBLIC SERVICE COMMISSION
OF SOUTH CAROLINA

COVER SHEET

DOCKET
NUMBER: 2007-358-E

(Please type or print)

Submitted by: Bonnie D. ShealySC Bar Number: 11125

Address: Robinson, McFadden & Moore, P.C.
PO Box 944
Columbia, SC 29202

Telephone: (803) 779-8900Fax: (803) 252-0724

Other: _____

Email: bshealy@robinsonlaw.com

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DOCKETING INFORMATION (Check all that apply)

☐ Emergency Relief demanded in petition ☐ Request for item to be placed on Commission's Agenda expeditiously

☒ Other: _____

INDUSTRY (Check one)	NATURE OF ACTION (Check all that apply)			
<input checked="" type="checkbox"/> Electric	<input type="checkbox"/> Affidavit	<input type="checkbox"/> Letter	<input type="checkbox"/> Request	
<input type="checkbox"/> Electric/Gas	<input type="checkbox"/> Agreement	<input type="checkbox"/> Memorandum	<input type="checkbox"/> Request for Certificatio	
<input type="checkbox"/> Electric/Telecommunications	<input type="checkbox"/> Answer	<input checked="" type="checkbox"/> Motion	<input type="checkbox"/> Request for Investigator	
<input type="checkbox"/> Electric/Water	<input type="checkbox"/> Appellate Review	<input type="checkbox"/> Objection	<input type="checkbox"/> Resale Agreement	
<input type="checkbox"/> Electric/Water/Telecom.	<input type="checkbox"/> Application	<input type="checkbox"/> Petition	<input type="checkbox"/> Resale Amendment	
<input type="checkbox"/> Electric/Water/Sewer	<input type="checkbox"/> Brief	<input type="checkbox"/> Petition for Reconsideration	<input type="checkbox"/> Reservation Letter	
<input type="checkbox"/> Gas	<input type="checkbox"/> Certificate	<input type="checkbox"/> Petition for Rulemaking	<input type="checkbox"/> Response	
<input type="checkbox"/> Railroad	<input type="checkbox"/> Comments	<input type="checkbox"/> Petition for Rule to Show Cause	<input type="checkbox"/> Response to Discovery	
<input type="checkbox"/> Sewer	<input type="checkbox"/> Complaint	<input type="checkbox"/> Petition to Intervene	<input type="checkbox"/> Return to Petition	
<input type="checkbox"/> Telecommunications	<input type="checkbox"/> Consent Order	<input type="checkbox"/> Petition to Intervene Out of Time	<input type="checkbox"/> Stipulation	
<input type="checkbox"/> Transportation	<input type="checkbox"/> Discovery	<input type="checkbox"/> Prefiled Testimony	<input type="checkbox"/> Subpoena	
<input type="checkbox"/> Water	<input type="checkbox"/> Exhibit	<input type="checkbox"/> Promotion	<input type="checkbox"/> Tariff	
<input type="checkbox"/> Water/Sewer	<input type="checkbox"/> Expedited Consideration	<input type="checkbox"/> Proposed Order	<input checked="" type="checkbox"/> Other: Testimony of Ellen T. Ruff	
<input type="checkbox"/> Administrative Matter	<input type="checkbox"/> Interconnection Agreement	<input type="checkbox"/> Protest		
<input type="checkbox"/> Other:	<input type="checkbox"/> Interconnection Amendment	<input type="checkbox"/> Publisher's Affidavit		
	<input type="checkbox"/> Late-Filed Exhibit	<input type="checkbox"/> Report		

BEFORE
THE PUBLIC SERVICE COMMISSION OF
SOUTH CAROLINA
DOCKET NO. 2007-358-E

In re:)	
Application of Duke Energy Carolinas, LLC)	TESTIMONY OF
For Approval of Energy Efficiency Plan)	ELLEN T. RUFF FOR
Including an Energy Efficiency Rider and)	DUKE ENERGY CAROLINAS
Portfolio of Energy Efficiency Programs)	
)	

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I. INTRODUCTION AND PURPOSE

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Ellen T. Ruff, and my business address is 526 South Church Street,
Charlotte, North Carolina.

Q. WHAT IS YOUR POSITION WITH DUKE ENERGY CAROLINAS, LLC?

A. I am President of Duke Energy Carolinas, LLC (“Duke Energy Carolinas” or the
“Company”). Duke Energy Carolinas is a wholly-owned subsidiary of Duke Energy
Corporation (“Duke Energy”).

**Q. PLEASE BRIEFLY SUMMARIZE YOUR EDUCATIONAL
BACKGROUND AND PROFESSIONAL AFFILIATIONS.**

A. I am a graduate of Simmons College with a Bachelor of Arts in Business. I also
have a Juris Doctor degree from the University of North Carolina at Chapel Hill and
have completed the Harvard Business School’s Advanced Management Program. I
am a member of the North Carolina State Bar, the Mecklenburg County Bar, and the
American Bar Association. I serve on the Board of Directors of Aqua America, Inc.
and on the Executive Committee of the North Carolina Citizens for Business and
Industry Board of Directors. I also serve on the North Carolina Economic
Development Board, the Charlotte Regional Partnership, and the Board of Directors
of United Way 2007.

**Q. PLEASE DESCRIBE YOUR BUSINESS BACKGROUND AND
EXPERIENCE.**

A. I joined Duke Power Company (now known as Duke Energy Carolinas) in 1978 as
an attorney in the Legal Department. I was named Vice President and General

1 Counsel of Electric Operations following the creation of Duke Energy Corporation
2 in 1997. I was named Vice President and General Counsel of Corporate, Gas and
3 Electric Operations in January 1999, and Senior Vice President and General
4 Counsel in February 2001. I was appointed Senior Vice President of Asset
5 Management for Duke Power, a division of Duke Energy Corporation, in August
6 2001. I became Senior Vice President of Power Policy and Planning in February
7 2003 and Group Vice President of Power Policy and Planning in March 2004. I
8 became Group Vice President of Planning and External Relations for Duke Power
9 in March 2005. I assumed my current position in April 2006.

10 **Q. WHAT ARE YOUR RESPONSIBILITIES IN YOUR CURRENT**
11 **POSITION?**

12 A. I lead Duke Energy Carolinas' regulated electric utility business in North Carolina
13 and South Carolina, which serves more than 2.2 million customers.

14 **Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THIS COMMISSION?**

15 A. Yes. I most recently appeared to present testimony in support of the Settlement
16 Agreement presented to the Commission in the Duke Energy/Cinergy Corp. merger
17 proceeding in PSCSC Docket No. 2005-210-E.

18 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

19 A. The purpose of my testimony is to: (1) provide an overview of Duke Energy
20 Carolinas' operations in its South Carolina retail service territory; (2) summarize the
21 Company's need for additional capacity from its 2007 Integrated Resource Plan
22 ("IRP"); (3) explain how the Company's capacity needs can be achieved, in part,

1 through treating energy efficiency, including demand response programs¹ as a “fifth
2 fuel;” (4) describe the impetus for Duke Energy Carolinas’ push to achieve greater
3 energy efficiency results; and (5) show how approval of Duke Energy Carolinas’
4 Application for Approval of Energy Efficiency Plan, Including an Energy Efficiency
5 Rider and Portfolio of Energy Efficiency Programs (the “Application”) is in the
6 public interest. The new regulatory approach, the Energy Efficiency Rider, and the
7 portfolio of energy efficiency programs are collectively referred to in my testimony
8 as the Energy Efficiency Plan.

9 **II. OVERVIEW OF SOUTH CAROLINA OPERATIONS**

10 **Q. PLEASE GIVE AN OVERVIEW OF DUKE ENERGY CAROLINAS’**
11 **OPERATIONS IN SOUTH CAROLINA.**

12 **A.** In consideration of its electric service franchise in South Carolina, the Company is
13 obligated to provide electric service to any retail customer in its South Carolina
14 service territory who seeks that service and is willing to pay the rates set for that
15 service. Duke Energy Carolinas is South Carolina’s second largest investor-owned
16 electrical utility in terms of the number of retail customers served and the size of our
17 service territory.

18 **Q. HOW MANY CUSTOMERS DOES DUKE ENERGY CAROLINAS SERVE?**

19 **A.** We currently provide retail electric service to approximately 2.2 million retail
20 customers in the Carolinas throughout a 22,000 square mile service territory in the
21 Central and Western portions of North Carolina and Western South Carolina.

¹ The term “energy efficiency,” as used in my testimony, includes both energy efficiency/conservation and demand response measures.

1 Approximately 530,000 of our customers are in South Carolina. Our retail
2 customers include residential, commercial, agricultural, and industrial customers,
3 including governmental entities. The textile, rubber and plastic products, chemicals,
4 automotive, and paper products industries are of major significance to our service
5 territory's economy. Other significant industries operating in our service area
6 include machinery and equipment manufacturing, primary metals, electronics, and
7 other manufacturing and service businesses.

8 **Q. WHAT GENERATING RESOURCES DOES THE COMPANY EMPLOY**
9 **TO MEET ITS CUSTOMERS' ELECTRICITY NEEDS?**

10 A. To generate the power to serve these customers, Duke Energy Carolinas owns and
11 operates three nuclear generating stations, eight coal-fired generating stations, thirty
12 hydroelectric stations, and several gas-fired combustion turbine generating stations.
13 Altogether, these generating facilities are capable of producing approximately
14 19,000 megawatts ("MWs") of electricity. The Company also makes long-term and
15 spot market purchases of electricity to assure economical and reliable service to our
16 customers.

17 To transmit and distribute this power, Duke Energy Carolinas owns or
18 operates approximately 13,000 circuit miles of transmission lines, more than 1,700
19 substations, over 97,000 miles of distribution lines, and is interconnected with eight
20 other electric utilities.

1 **III. NEED FOR CAPACITY**

2 **Q. PLEASE SUMMARIZE THE COMPANY'S NEED FOR ADDITIONAL**
3 **CAPACITY FROM ITS 2007 IRP ANALYSIS.**

4 A. As Company Witness Hager presents in her testimony, Duke Energy Carolinas'
5 2007 IRP shows that the Company has sufficient resources to meet its load
6 obligations and target planning reserve margin of 17% through 2008. However,
7 starting in 2009, the Company will need additional capacity over time to
8 accommodate load growth, unit capacity adjustments, unit retirements, existing
9 demand side management program reductions, and expirations of purchased-power
10 contracts. This need is approximately 6,600 MW by 2017 and increases to 10,700
11 MW by 2027.

12 Duke Energy Carolinas' quantitative analyses demonstrates that a
13 combination of additional base load, intermediate, and peaking generation,
14 renewable resources, and energy efficiency programs is required over the next
15 twenty years to meet customer demand reliably and cost-effectively in South
16 Carolina.

17 **IV. ROLE OF ENERGY EFFICIENCY IN MEETING CAPACITY NEEDS**

18 **Q. PLEASE DESCRIBE HOW THE COMPANY PROPOSES TO ACHIEVE A**
19 **PORTION OF ITS FUTURE CAPACITY NEEDS THROUGH ENERGY**
20 **EFFICIENCY.**

21 A. Duke Energy Carolinas' Application proposes to treat energy efficiency as a
22 resource – a “fifth fuel” – capable of providing a cost-effective and emissions-free
23 option for meeting the Company's growing electricity demands. Under the

1 Company's Energy Efficiency Plan, energy efficiency is treated as a virtual power
2 plant. However, instead of iron in the ground, the Company proposes to create
3 many "virtual energy efficiency plants" comprised of programs designed to meet
4 customers' electricity needs by saving watts instead of generating watts. We refer to
5 this as the "save-a-watt" approach to energy efficiency. Under this proposal, we
6 have an opportunity – but not a guarantee – of recovering our program costs and
7 achieving earnings comparable to supply side resources on our energy efficiency
8 investments.

9 Although the Company will still need to build new electric generation
10 facilities or purchase power at wholesale to deliver a portion of the 3400 MWs
11 needed by 2012, Duke Energy Carolinas' Energy Efficiency Plan can address a
12 significant portion of this need. The Company projects that its Energy Efficiency
13 Plan will contribute over 1860 MWs of capacity and 743,000 MWhs of energy
14 needed in its South Carolina and North Carolina service territories over the next
15 four years.²

16 **Q. HOW WOULD DUKE ENERGY CAROLINAS BE COMPENSATED FOR**
17 **SUCCESSFUL ENERGY EFFICIENCY PROGRAMS UNDER THE SAVE-**
18 **A-WATT APPROACH?**

19 **A.** The Company is proposing a new regulatory approach to compensation for energy
20 efficiency programs. As Company Witness Farmer testifies, Duke Energy Carolinas
21 seeks to be compensated through the amortization of and a return on 90% of the
22 generation costs avoided by the watts saved under its Energy Efficiency Plan. The

1 Company believes this new recovery mechanism will more appropriately
2 compensate and encourage Duke Energy Carolinas to produce a portion of the
3 capacity and energy needs projected in the Company's 2007 IRP through "saved"
4 watts. The Company's proposal for independent measurement and verification will
5 also ensure that it is only paid for the actual demand- and energy-reduction impacts
6 it achieves (*i.e.* watts saved) through its energy efficiency programs.

7 **Q. WILL INCLUDING ENERGY EFFICIENCY IN THE COMPANY'S**
8 **RESOURCE PORTFOLIO BENEFIT CUSTOMERS?**

9 A. Yes. Our save-a-watt approach to energy efficiency offers two principal benefits to
10 customers: (1) reduced cost; and (2) reduced environmental impact. In the absence
11 of significant energy efficiency contributions to the Company's projected capacity
12 needs as outlined in Company Witness Hager's testimony, Duke Energy Carolinas
13 will be required to build more new generation and purchase more power on the
14 wholesale market as early as 2009. The Company's customers will bear 100% of
15 these costs. In contrast, if Duke Energy Carolinas achieves significant energy
16 efficiency under its proposed Energy Efficiency Plan, customers will realize an
17 automatic savings of 10% of the Company's avoided generation costs. Further,
18 significant energy efficiency contributions will enable Duke Energy Carolinas to
19 delay or avoid building future generating units required to meet the Company's
20 projected capacity needs.

21 The Company's Energy Efficiency Plan also benefits customers by
22 providing an emissions-free resource to meet their energy needs. At a time when

² This proposal also includes the replacement of 700 MWs of existing energy efficiency programs with new programs.

1 global climate change is at the forefront of public discourse and the future regulation
2 of greenhouse gas emissions is likely, Duke Energy Carolinas believes that under
3 the new regulatory treatment it is prudent to aggressively pursue all cost-effective
4 energy efficiency.

5 **V. IMPETUS FOR MORE ENERGY EFFICIENCY**

6 **Q. WHAT FACTORS ARE CAUSING DUKE ENERGY CAROLINAS TO**
7 **PLACE AN INCREASED EMPHASIS ON ENERGY EFFICIENCY AT**
8 **THIS TIME?**

9 A. As I discussed above, the Company's need for additional capacity and the regulatory
10 uncertainty surrounding greenhouse gas emissions are clearly major drivers of the
11 Company's Energy Efficiency Plan. However, the Energy Efficiency Plan was also
12 developed to be responsive to challenges from third parties, including some of our
13 large customers and national environmental organizations, to provide customers
14 more options to reduce electricity consumption. As Duke Energy Carolinas'
15 Witness Ted Schultz testifies, the energy efficiency programs developed as part of
16 the Energy Efficiency Plan were developed in collaboration with a number of
17 important stakeholders, including several of the Company's larger industrial
18 customers. Duke Energy Carolinas understands that for its commercial and
19 industrial customers total energy consumption, not simply price per kWh, is critical
20 to containing production costs and maintaining a competitive advantage. While
21 South Carolina is benefited by energy costs that are below the national average, this
22 is not enough to recruit and retain industries in the State. In the face of rising energy
23 costs, the Company believes innovative cost-effective energy efficiency programs

1 that provide customers more options to manage their energy bills should also be
2 vigorously pursued. Duke Energy Carolinas' Energy Efficiency Plan provides the
3 necessary programs and regulatory treatment to encourage such innovation.

4 **Q. WHY IS TIME OF THE ESSENCE IN OBTAINING APPROVAL OF THE**
5 **COMPANY'S ENERGY EFFICIENCY PLAN?**

6 A. In its 2004 Report on the Status of Utility Demand Side Management presented to
7 the South Carolina General Assembly, the South Carolina Energy Office wrote,
8 "[T]he future of electric demand-side programs in South Carolina appears bleak . .
9 ." Report, at p. vi. In addition to the dim picture painted by the South Carolina
10 Energy Office, the 2006 Statistical Yearbook published by the Edison Electric
11 Institute ("EEI") ranked South Carolina as the fifth highest state in average annual
12 kWh consumption per residential customer and the tenth highest state in average
13 annual revenue per residential customer. EEI Statistical Yearbook (2006), Table
14 8.17, p. 103. Clearly, if there is any state that would benefit from the aggressive
15 pursuit of energy efficiency programs, it is South Carolina.

16 In light of (i) the Company's impending capacity needs, (ii) the high
17 electricity usage in South Carolina, (iii) society's greater understanding of the
18 effects of greenhouse gas emissions, and (iv) competitive pressures to keep rates
19 low, time is of the essence to give new life to demand-side and energy efficiency
20 programs. The Company believes its Energy Efficiency Plan provides the
21 regulatory paradigm shift necessary to change the *status quo* and brighten the future
22 of energy efficiency programs for South Carolinians.

1 **VI. THE PUBLIC INTEREST**

2 **Q. WHAT DOES THE COMPANY PROJECT THE RATE IMPACT OF ITS**
3 **ENERGY EFFICIENCY PLAN TO BE FOR DUKE ENERGY CAROLINAS'**
4 **CUSTOMERS?**

5 A. The Company's Energy Efficiency Plan will result in a small rate increase for
6 customers in terms of absolute price/kWh; however, this rate impact is less than the
7 increase Duke Energy Carolinas would seek from customers if it were required to
8 build new generation to meet the load avoided as a result of its energy efficiency
9 programs. Further, those customers who choose to participate in the Company's
10 energy efficiency programs should actually see their monthly bills go down. Thus,
11 all customers will benefit under the Company's proposed save-a-watt approach to
12 energy efficiency and those who actively participate in the energy efficiency
13 programs will see even greater benefits.

14 **Q. IS THE COMPANY'S ENERGY EFFICIENCY PLAN IN THE PUBLIC**
15 **INTEREST?**

16 A. Yes. As I previously stated, Duke Energy Carolinas' Energy Efficiency Plan
17 provides two principal benefits to the Company's South Carolina customers --
18 reduced costs and reduced environmental impacts. The Energy Efficiency Plan is
19 designed to produce energy and demand savings to help meet the Company's load
20 obligations at an overall cost and environmental impact that is lower to customers
21 than comparable supply-side investments. New generation necessary to meet
22 customers' increasing demand will place upward pressure on electricity rates. The
23 Company's proposed energy efficiency portfolio with the proposed regulatory

1 treatment under its Energy Efficiency Rider is offered at a lower cost to new
2 generation and thus results in lower costs to customers than they would experience
3 if Duke Energy Carolinas built new generation and customers will have the
4 opportunity to further lower their electric bills by participating in the Company's
5 energy efficiency programs. In addition, customers will only pay for results, *i.e.*,
6 energy efficiency savings achieved by the Company as measured and verified by a
7 third party.

8 Reduced costs and reduced environmental impacts are clearly in the public
9 interest of South Carolinians, whose current average annual residential kWh
10 consumption is greater than that of 45 other states in the nation. Simply put, South
11 Carolinians stand to benefit from Duke Energy Carolinas' Energy Efficiency Plan.

12 As the Commission recently recognized, "[E]nergy efficiency is a
13 worthwhile goal to pursue, not only in an age when more and more demand is
14 placed on electric utilities but also during a time when increased usage places
15 further demands on the environment and increases the need for new generation and
16 the associated construction and operating costs." PSCSC NDI 2007-2-EG, Order
17 No. 2007-678 at 1. Duke Energy Carolinas concurs with the Commission and
18 believes its Energy Efficiency Plan will create the regulatory framework necessary
19 to achieve this goal.

20 **Q. DOES THIS CONCLUDE YOUR PRE-FILED DIRECT TESTIMONY?**

21 **A. Yes.**

**BEFORE
THE PUBLIC SERVICE COMMISSION
OF SOUTH CAROLINA
DOCKET NO. 2007-358-E**

In Re:

)
)
Application of Duke Energy)
Carolinas, LLC for Approval of)
Energy Efficiency Plan Including an)
Energy Efficiency Rider and)
Portfolio of Energy Efficiency)
Programs)

CERTIFICATE OF SERVICE

This is to certify that I, Leslie L. Allen, a legal assistant with the law firm of Robinson, McFadden & Moore, P.C., have this day caused to be served upon the person(s) named below the **Testimony of Ellen T. Ruff** in the foregoing matter by placing a copy of same in the United States Mail, postage prepaid, in an envelope addressed as follows:

Jeremy C. Hodges, Esquire
Nelson Mullins Riley & Scarborough, LLP
P.O. Box 11070
Columbia, SC 29211

Scott A. Elliott, Esquire
Elliott & Elliott, PA
721 Olive Avenue
Columbia, SC 29205

J. Blanding Holman, IV, Esquire
Southern Environmental Law Center
200 W. Franklin Street, Suite 330
Chapel Hill, NC 27516

Robert E. Tyson, Jr., Esquire
Sowell Gray Stepp & Laffitte, LLC
Post Office Box 11449
Columbia, SC 29211

Nanette S. Edwards, Esquire
Office of Regulatory Staff
Post Office Box 11263
Columbia, SC 29211

Dated at Columbia, South Carolina this 10th day of December, 2007.

A handwritten signature in cursive script, reading "Leslie Allen", written in dark ink.

Leslie L. Allen